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REMARKS

A. Regarding the Amendments

Claims 22, 26 and 93-95 have been amended as set forth in the attached "Version With Markings To Show Changes Made." As amended, the claims are supported by the specification and the original claims. Thus, upon entry of the amendments, claims 22, 26 and 93-95 will be pending.

B. Objection to the Drawings

It is stated by the Examiner that the drawings were objected to in Paper No. 7, mailed October 16, 2000. It is noted that this mailing is designated Paper No. 8 on the copy received by Applicants. Regardless, Form 948 indicates that Figures 1-4 all contain objectionable characteristics. Accordingly, with this Response, Applicants are submitting new Figures 1-4. Figures 1-3 have not been changed, other than to comply with the drawing requirements. Figure 4 has been amended only to remove the figure legend submitted with the original figure. The information from the legend is already in the "Description of Figures" section in the application. It is respectfully submitted that the replacement figures are in compliance with PTO requirements. Entry of the replacement figures is respectfully requested.

C. Rejection Under 35 U.S.C. § 112

Applicants respectfully traverse the rejection of claims 22, 26 and 93-95 under 35 U.S.C. § 112, second paragraph, as allegedly indefinite for failing to point out and distinctly claim the subject matter of the invention.

Claims 22 and 26 are rejected as allegedly indefinite as they depend from cancelled claims. The Examiner's attention is respectfully drawn to claims 22 and 26, as amended. Upon entry of the amendments submitted herein, claims 22 and 26 depend from claims 93 and 94,

respectively. Claims submitted as claims 90-92 in the preliminary amendment accompanying the CPA were renumbered by the Patent and Trademark Office as claims 93-95. The dependency of claims 22 and 26 has been amended correspondingly. As claims 22 and 26 now depend upon pending claims, it is submitted that these claims are not indefinite.

Claims 93-93 are rejected as allegedly indefinite as step c) of each of these claims states that the sequence of nucleotides encodes a *Caenorhabditis* LOV-1 gene. The Examiner's attention is respectfully drawn to the amended claims, where the language "a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 gene" has been amended to read "a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein" in part c) of claims 93, 94 and 95. It is respectfully submitted that the claims, as amended, are not indefinite.

Additionally, claims 93-93 are rejected as allegedly indefinite as step c) recites a sequence of nucleotides that encode a gene that hybridizes along its full length to at least one of the exons of SEQ ID NO: 3. The Examiner's attention is respectfully drawn to the amended claims, where the language of the claim has been amended to clarify the claim. These amendments do not change the scope of the claim. As discussed above, the term "gene" has been changed to "protein." Additionally, the language "hybridizes along its full length to the full length of" has been replaced with "is fully complementary to." As such, the sequence of nucleotides in part c) of claims 93, 94 and 95 is clarified as encoding a *Caenorhabditis* LOV-1 protein and that is fully complementary to at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors. It is respectfully submitted that this amendment clarifies the language submitted in the claims as originally filed and that, as amended, the claims are not indefinite.

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As set forth above, claims 22, 26 and 93-95 meet the definiteness requirement of 35 U.S.C. §112, second paragraph. Accordingly, removal of the rejections are respectfully requested.

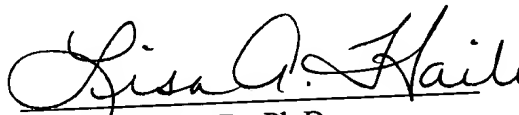
CONCLUSION

In summary, for the reasons set forth herein, Applicants maintain that claims 22, 26 and 93-95 clearly and patentably define the invention, respectfully request that the Examiner reconsider the various grounds set forth in the Office Action, and respectfully request the allowance of the claims which are now pending.

If the Examiner would like to discuss any of the issues raised in the Office Action, Applicant's representative can be reached at (858) 677-1456. Please charge any additional fees, or make any credits, to Deposit Account No. 50-1355.

Respectfully submitted,

Date: February 24, 2003



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

22. (Twice Amended) The construct of claim [90] 93, wherein the reporter gene encodes a fluorescent protein.

26. (Twice Amended) The plasmid of claim [91] 94 that is an expression vector.

93. (Amended) A construct comprising an isolated nucleic acid molecule operatively linked to a reporter gene, wherein the nucleic acid molecule comprises a sequence of nucleotides selected from the group consisting of:

- a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3;
- b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;
- c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 [gene] protein and that [hybridizes along its full length to the full length of] is fully complementary to at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and
- d) a sequence of nucleotides degenerate with the sequence of nucleotides of c).

94. (Amended) A plasmid comprising an isolated nucleic acid molecule comprising a sequence of nucleotides selected from the group consisting of:

- a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3;

- b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;
 - c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 [gene] protein and that [hybridizes along its full length to the full length of] is fully complementary to at least one of the exons set forth in SEQ ID No. 3 under conditions of at least moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and
 - d) a sequence of nucleotides degenerate with the sequence of nucleotides of c).
95. (Amended) An isolated nucleic acid molecule that encodes a mutant *Caenorhabditis* LOV-1 protein comprising a sequence of nucleotides that encodes the sequence of amino acids set forth in SEQ ID NO. 15, wherein:
- a *Caenorhabditis elegans* nematode expressing the mutant protein exhibits defective mating behavior;
 - a nematode that expresses such defect exhibits one or both of an altered location of vulva (Lov) and response phenotype; and
 - a wild-type LOV-1 protein is encoded by the nucleic acid molecule consisting of:
 - a) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 protein and that encodes the sequence of amino acids encoded by the complement of the sequence of nucleotides set forth in SEQ ID No. 3;
 - b) a sequence of nucleotides that is the complement of a sequence of nucleotides set forth in SEQ ID No. 3 and that encodes a *Caenorhabditis* LOV-1 protein, or complement thereof;
 - c) a sequence of nucleotides that encodes a *Caenorhabditis* LOV-1 [gene] protein and that [hybridizes along its full length to the full length of] is fully complementary to at least one of the exons set forth in SEQ ID No. 3 under conditions of at least

moderate stringency, and that is present in the genome of a *Caenorhabditis* nematode, wherein a *Caenorhabditis elegans* expressing the LOV-1 protein exhibits normal location of vulva and response male nematode sensory behaviors; and
d) a sequence of nucleotides degenerate with the sequence of nucleotides of c).



FIG. 1

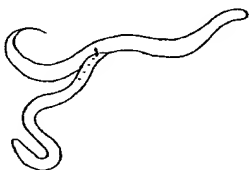
intact
approaches vulva



stops at vulva



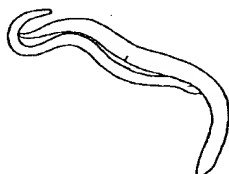
inserts spicules and transfers sperm



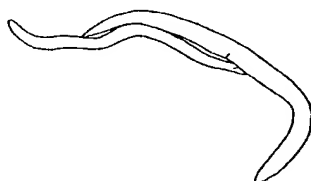
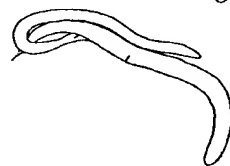
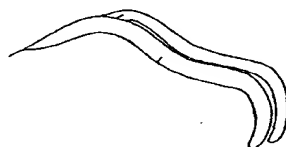
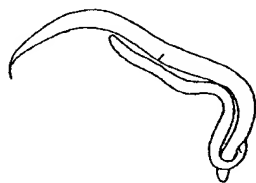
hook ablated
approaches vulva



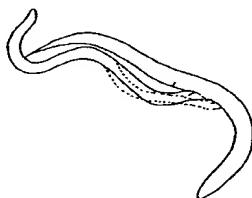
passes vulva



circles hermaphrodite



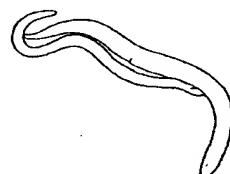
initiates a slow search for the vulva using
the p.c.s. and spicules (t=300s)



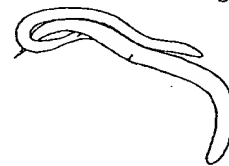
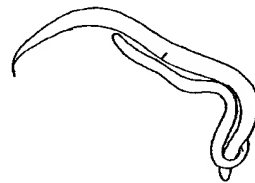
lov-1(sy552)
approaches vulva



passes vulva



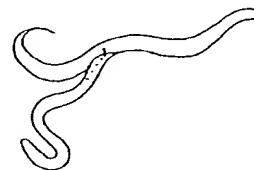
circles hermaphrodite



stops at vulva



inserts spicules and transfers sperm





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FIG. 2

A. *lov-1(sy552)* rescue data

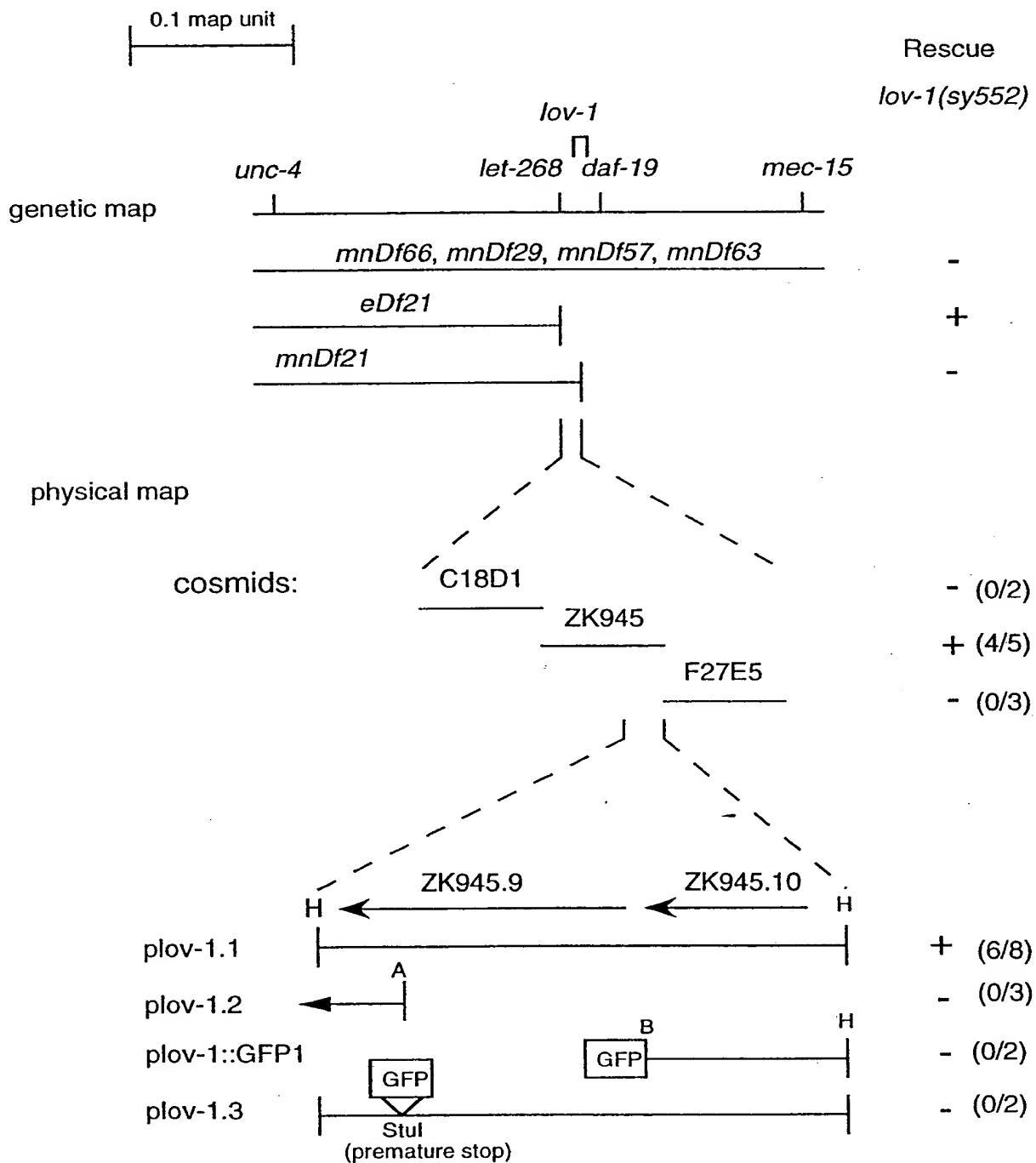


FIG. 2

B. *lov-1* gene structure: 16.7 kb rescuing clone

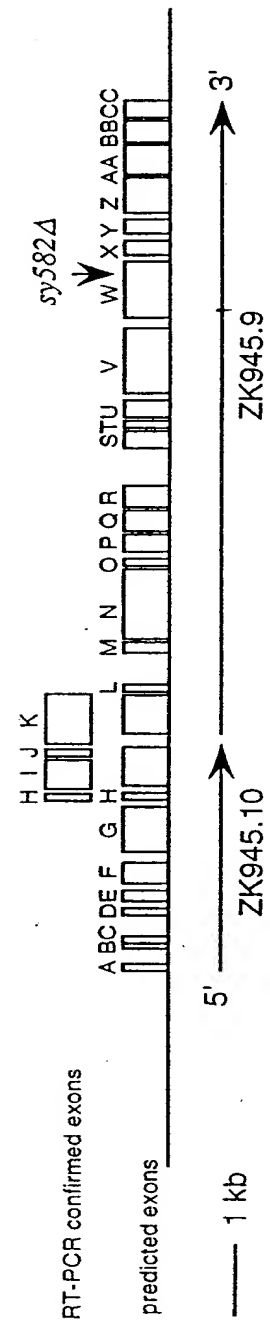


FIG. 2

C. Schematic of GFP fusion constructs and expression data





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FIG. 2

D. LOV-1 structural features and sequence homologies

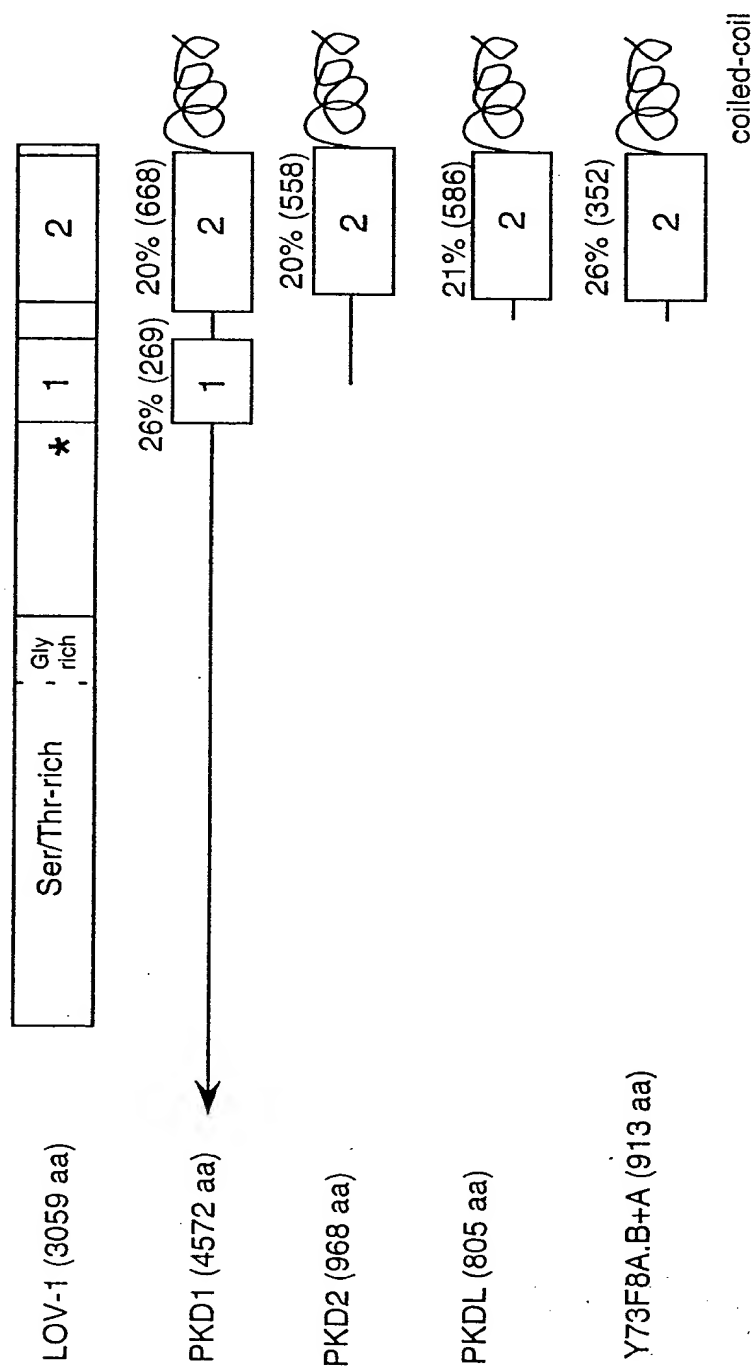




FIG. 3

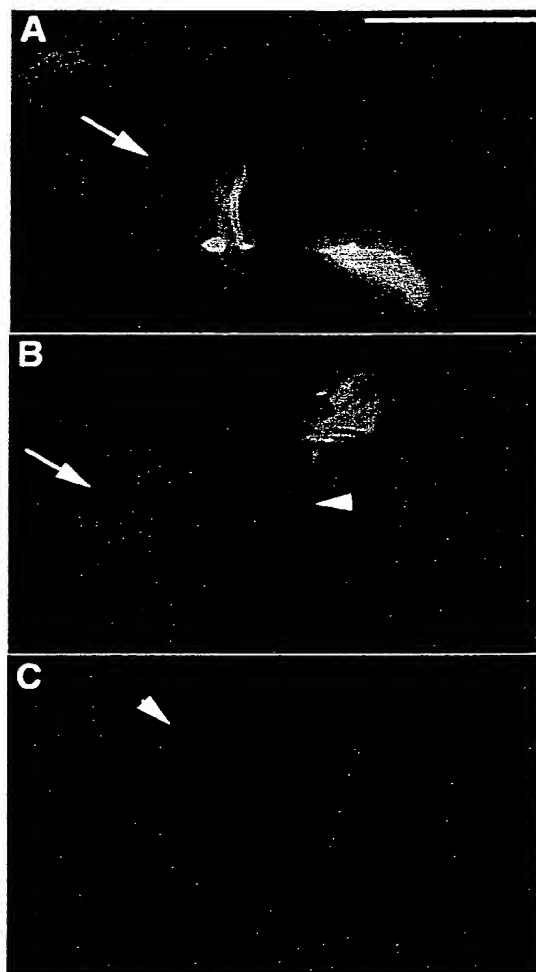




FIG. 4

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